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May 5, 1997

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
Room 222  
1919 M Street NW  
Washington DC 20554

**Re: Petition for Partial Reconsideration of Sierra Digital  
Communications, Inc.  
CC Docket No. 92-297**

Dear Mr. Caton

Pursuant to Section 1.429 of the Commission's Rules and on behalf of Sierra Digital Communications, Inc., I enclose the original and nine copies of the above-referenced Petition for Partial Reconsideration for filing with the Commission.

Kindly date-stamp and return the enclosed extra copy of this cover letter.

If there are any questions about this filing, please call me directly at the number above.

Respectfully submitted,

  
Mitchell Lazarus

Enclosure

cc (w/encl): Hal Tenney  
Sierra Digital Communications, Inc.

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington DC 20554

In the Matter of )  
 )  
Rulemaking to Amend Parts 1, 2, 21, and 25 )  
of the Commission's Rules to Redesignate )  
the 27.5-29.5 GHz Frequency Band, to ) CC Docket No. 92-297  
Reallocate the 29.5-30.0 GHz Frequency Band, )  
to Establish Rules and Policies for Local )  
Multipoint Distribution Service and for Fixed )  
Satellite Services )

**PETITION FOR PARTIAL RECONSIDERATION**

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May 5, 1997

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## **SUMMARY**

Sierra Digital Communications, Inc. (“Sierra”) urges the Commission to reconsider its decision to allocate all 300 MHz of the 31 GHz band to LMDS. Instead, the Commission should allocate the middle 150 MHz to LMDS, but retain the outer 150 MHz (31.000-31.075 and 31.225-31.300 GHz) for private use under the current rules.

There are two reasons why an allocation of the entire band to LMDS is not justified by the record. First, the record supports no more than 1,000 MHz for LMDS; but the Commission’s plan would give LMDS far more than that — fully 1,150 MHz of unencumbered spectrum, plus another 150 MHz suitable for hub-to-subscriber transmissions. Second, the Commission rationalizes the reallocation in part by citing low private usage of the 31 GHz band. But in making this calculation, the Commission not only fails to account properly for the high public interest in 31 GHz applications — more than 70% of transmitters in the band are dedicated to governmental systems, hospitals, schools, traffic control and monitoring systems, and other public safety uses — but also overlooks the prodigious rate of growth in the band. It is arbitrary and capricious to consider the future promise of LMDS, which presently operates only one small system, while at the same time ignoring the steep rise in demand for future 31 GHz private services.

For the Commission to give interference protection only to incumbent 31 GHz licensees, while dismissing pending applications and refusing to accept new ones, similarly ignores the strong growth of public-safety uses of the band. And the Commission’s proposed alternatives for 31 GHz users fail to grapple with the realities facing the governmental entities that make up the majority of licensees. Unlike some businesses, governments cannot quickly gear up to expend

large sums at auction, and then recoup by reselling excess capacity. Their service requirements often make spectrum disaggregation and geographic partitioning infeasible, especially for traffic control systems, which are the single most common application in the band. And taking service from another provider would leave public safety subject at the whim of a commercial entity. In many cases, installing alternative technologies is either impractical or prohibitively expensive — which is why these users turned to 31 GHz in the first place.

If the Commission does reallocate all of 31 GHz to LMDS, then at the very least it should reinstate the applications pending as of the Second Report and Order, and let them move to the outer sub-bands with the same interference protection as incumbents. Private users effectively had no notice of the impending change in the rules at 31 GHz — the Commission's first hint came in the Fourth Notice, but the Commission subsequently dismissed all applications filed after the Fourth Notice. And the public interest in these applications far exceeds the limited benefits of auctioning the sub-bands free of the pending applications.

Finally, the Commission should abandon the frequency tolerance of 0.001% as to 31 GHz, or in the alternative should delay its implementation for two years. If the Commission insists on reallocating the entire band to LMDS, some public safety users may have to try reaching an accommodation with the local LMDS licensee, but the record shows that the 0.001% tolerance would make the equipment too expensive for most governmental entities. Moreover, the higher tolerance will probably be unnecessary for BTA-boundary frequency coordination for at least two years, if not indefinitely. In any event, the application of this requirement at 31 GHz was never proposed in a public notice, and so is barred by the Administrative Procedure Act.

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington DC 20554

In the Matter of	)	
	)	
Rulemaking to Amend Parts 1, 2, 21, and 25	)	
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the 27.5-29.5 GHz Frequency Band, to	)	CC Docket No. 92-297
Reallocate the 29.5-30.0 GHz Frequency Band,	)	
to Establish Rules and Policies for Local	)	
Multipoint Distribution Service and for Fixed	)	
Satellite Services	)	

**PETITION FOR PARTIAL RECONSIDERATION**

Pursuant to Section 1.429 of the Commission's Rules, Sierra Digital Communications, Inc. ("Sierra") hereby files this Petition for Partial Reconsideration of the Second Report and Order in the above-captioned proceeding.<sup>1/</sup>

For the reasons presented below, the Commission should reconsider its decision to allocate all 300 MHz of the 31 GHz band to LMDS. Instead, it should allocate only the middle 150 MHz to LMDS, and retain the outer 150 MHz (31.000-31.075 and 31.225-31.300 GHz) for private use under the current rules. In the alternative, the Commission at the very least should reinstate the 31 GHz applications that were pending when the Second Report and Order was released. And, in any event, the Commission should rescind the newly-imposed 0.001% tolerance requirement as to the outer sub-bands at 31 GHz.

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<sup>1/</sup> Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rulemaking, FCC 97-82 (released March 13, 1997) ("Second Report and Order"). Sierra actively participated in the proceeding following release of the First Report and Order and Fourth Notice of Proposed Rulemaking, FCC 96-311 (released July 22, 1996) ("Fourth Notice").

**I. THE COMMISSION SHOULD NOT ALLOCATE THE 31.000-31.075 AND 31.225-31.300 GHz SUB-BANDS TO LMDS, BUT SHOULD RETAIN THEM FOR PRIVATE POINT-TO-POINT USE.**

The Second Report and Order, implementing the proposals of the Fourth Notice, reallocated all 300 MHz of the 31 GHz band (31.0-31.3 GHz) from private use to LMDS and announced plans to auction it together with other LMDS spectrum.<sup>2/</sup> The Commission rationalized additional spectrum for LMDS by explaining that 150 MHz of the original allocation must be shared with satellite feeder links and therefore is limited to hub-to-subscriber transmissions, leaving only 850 MHz unencumbered, while the Commission had previously determined that LMDS needs 1,000 MHz.<sup>3/</sup> It defended choosing the 31 GHz band to make up the shortfall by stating that the band is not used intensively.<sup>4/</sup> The reallocation yields a total of 1,150 MHz of unencumbered spectrum for LMDS, plus another 150 MHz suitable for hub-to-subscriber use.

Sierra and several users of the 31 GHz band have acknowledged that LMDS needs additional spectrum at 31 GHz, but asked the Commission to retain some of the band for point-to-point applications. Sierra proposed this band plan:

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<sup>2/</sup> Second Report and Order at ¶¶ 36, 125-26.

<sup>3/</sup> Second Report and Order at ¶¶ 39-40.

<sup>4/</sup> Second Report and Order at ¶ 36. The Fourth Notice also supported reallocating the 31 GHz band on the additional ground that users were not entitled to any interference protection. Fourth Notice at ¶ 102.

31.000-31.075 GHz: point-to-point fixed (75 MHz)

31.075-31.225 GHz: LMDS (150 MHz)

31.225-31.300 GHz: point-to-point fixed (75 MHz).<sup>5/</sup>

Sierra noted that this plan gives LMDS a full 1,000 MHz of unencumbered spectrum, and that LMDS interests have never demonstrated the need for more.<sup>6/</sup>

Sierra and the 31 GHz users presented data showing that the Fourth Notice had underestimated both the number of users and types of applications in the 31 GHz band, and that occupancy in the band is growing exponentially.<sup>7/</sup> Sierra demonstrated that users receive effective interference protection through the technical rules, rather than conventional frequency coordination.<sup>8/</sup> Sierra established that most users are schools, hospitals, and local governmental entities employing public safety applications that are very much in the public interest.<sup>9/</sup> And Sierra made a legal showing that 31 GHz users are entitled to public interest consideration even though they receive no interference protection under the rules.<sup>10/</sup>

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<sup>5/</sup> Reply Comments of Sierra Digital Communications, Inc. at 12 (filed Aug. 22, 1996) (“Sierra Reply Comments”).

<sup>6/</sup> Comments of Sierra Digital Communications, Inc. at 9-11 (filed Aug. 12, 1996) (“Sierra Comments”).

<sup>7/</sup> *E.g.*, Sierra Comments at 2-6; Sierra Reply Comments at 2-5.

<sup>8/</sup> Sierra Comments at 6-8.

<sup>9/</sup> *See, e.g.*, Letter of Mitchell Lazarus to William F. Caton at 5 (Sept. 19, 1996) (city, county, and state communications systems, hospitals, schools, and traffic control and monitoring systems account for more than 70% of transmitters in the band).

<sup>10/</sup> Sierra Reply Comments at 5-8, *citing* H&B Communications Corp. v. FCC, 420 F.2d 638 (D.C. Cir. 1969). The issues summarized in this paragraph were also the subject of written and oral *ex parte* presentations.

The Second Report and Order conceded most of these points, but nonetheless resolved to allocate the entire band to LMDS. The Commission responded to 31 GHz interests in two respects: by giving 31 GHz incumbents in the outer sub-bands protection against LMDS licensees;<sup>11/</sup> and by giving incumbents in the middle sub-band similar protection in the outer sub-bands if they apply promptly to relocate there.<sup>12/</sup> But the Commission also amended the Rules to bar new point-to-point applications anywhere in the 31 GHz band, and dismissed all applications filed after the release date of the Fourth Notice.<sup>13/</sup> The band is thus closed to all point-to-point users except those already licensed when the Fourth Notice was released last July.

The record does not support the Commission's decision reallocating the 31.000-31.075 and 31.225-31.300 GHz sub-bands to LMDS. Rather, the record convincingly establishes that the public interest will be better served if the Commission adopts Sierra's proposal to allocate the middle 150 MHz sub-band to LMDS while continuing to license the two outer 75 MHz sub-bands under the rules in place prior to the Second Report and Order. That allocation offers LMDS the full amount of spectrum justified in the record, while also preserving sufficient spectrum to accommodate the important public services that need the 31 GHz band.

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<sup>11/</sup> Second Report and Order at ¶ 80.

<sup>12/</sup> Second Report and Order at ¶ 91. In addition, the Commission announced it will auction the outer sub-bands separately from other LMDS frequencies, *Id.* at ¶ 310, perhaps on the assumption that incumbents may wish to bid on this segment of the spectrum. *Id.* at ¶ 114. We discuss in Part I.C why this is not an effective option for most public safety agencies.

<sup>13/</sup> Second Report and Order at ¶ 100, 104-05.

**A. THE COMMISSION SHOULD NOT ALLOCATE THE 31.000-31.075 AND 31.225-31.300 GHz SUB-BANDS TO LMDS, BUT SHOULD RETAIN THEM FOR PRIVATE POINT-TO-POINT USE.**

Until the Fourth Notice, it had never been suggested that a single LMDS operator needs more than 1,000 MHz to provide a viable service.<sup>14/</sup> Even the Fourth Notice failed to provide any reasoned support for this huge amount of spectrum.<sup>15/</sup> Once the Commission made the proposal to allocate the additional 300 MHz, of course, LMDS interests rushed in to support it. Offers of spectrum have much the same effect today as rumors of gold in the last century. A few LMDS supporters even speculated in *ex parte* filings on how they might use the additional spectrum.<sup>16/</sup> But the record still lacks even the most perfunctory showing that more than 1,000 MHz is actually needed for LMDS, or for any particular LMDS service.<sup>17/</sup> And there is no factual showing in the record that the additional spectrum would improve the services LMDS operators could provide, or make services more attractive to customers.

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<sup>14/</sup> The Commission's first LMDS proposal suggested two providers per market, each using 1 GHz. Rules and Policies for Local Multipoint Distribution Service, 8 FCC Rcd 557, 560 (1993).

<sup>15/</sup> The Notice merely said, "The proposed designation of 300 MHz of spectrum would ensure consumers access to new and competitive technologies." Fourth Notice at ¶ 100.

<sup>16/</sup> *E.g.*, E-Mail of Robert Pettit to Commissioner Chong (Dec. 3, 1996).

<sup>17/</sup> During *ex parte* contacts, some Commission staff members suggested that LMDS might need more than 150 MHz at 31 GHz to make up for the technical problems of operating in non-adjacent bands. But the Commission ultimately rejected that view: "The comments do not reflect any technical problems that are obstacles to use of the 31 GHz band by LMDS operators, nor the need for any measures to facilitate their deployment of services in the band." Second Report and Order at ¶ 41.

Citing only the unsupported speculations of LMDS interests, the Second Report and Order nonetheless concludes, “It has been *sufficiently demonstrated* that LMDS has greater potential in the marketplace if we provide the additional spectrum we proposed for its licensing.”<sup>18/</sup> Sierra disagrees. At most, the record merely demonstrates that interested parties *asserted* LMDS could put 1,150 MHz of unencumbered spectrum to better use than 1,000 MHz. And even those assertions came only after the Commission proposed to make 1,150 MHz available. No one expressed a need for more than 1,000 MHz before then. And even since then, no party has attempted to demonstrate the need for that much spectrum. Certainly no party has provided a demonstration that justifies ignoring the public interest in the point-to-point uses of the 31 GHz band, discussed below. In short, the Commission’s *ipse dixit* rationale does not constitute reasoned decision-making.<sup>19/</sup>

**B. The Commission Continues to Underestimate Near-Term Use of the 31 GHz Band for Point-to-Point Applications.**

The Commission originally proposed reallocating the 31 GHz band for LMDS in part because it thought there were only 27 licensees in the band.<sup>20/</sup> The Commission assumed those were clustered in a few lightly-populated areas,<sup>21/</sup> and that all but one or two of the governmental

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<sup>18/</sup> Second Report and Order at ¶ 40 (emphasis added).

<sup>19/</sup> Motor Vehicle Manufacturers Ass’n v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 43 (1983) (agency rule is arbitrary and capricious if explanation for agency decision runs counter to evidence); Weyburn Broadcasting Limited Partnership v. FCC, 984 F.2d 1220 (D.C. Cir. 1984) (vacating and remanding agency action unsupported by evidence in the record).

<sup>20/</sup> Fourth Notice at 75 (IFRA § IV).

<sup>21/</sup> *E.g.*, Fourth Notice at ¶¶ 16, 99.

licensees were small places with populations of 50,000 or less.<sup>22/</sup> Sierra and others presented data to show otherwise. In the Second Report and Order, the Commission accordingly raised its estimate to 86 licensees operating 122 stations.<sup>23/</sup> The Commission's own data show licensees in 11 states, scattered across every part of the country plus the Gulf of Mexico region.<sup>24/</sup> And the Commission's list of licensees shows several governmental licensees whose populations considerably exceed 50,000.<sup>25/</sup>

More important than the present number of licensees, however, is the prodigious rate of growth in the band. Sierra has explained in the record that use of the 31 GHz band, like every other, depends heavily on the cost of equipment.<sup>26/</sup> As a rule, the cost of microwave equipment increases with frequency and decreases over time. The penetration of new technologies tends to resemble an "S" curve with slow penetration at first, followed by a rapid rise in penetration as marketing efforts take hold and the costs of equipment come down. When the Commission

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<sup>22/</sup> Fourth Notice at 75 (IFRA § IV).

<sup>23/</sup> Second Report and Order at ¶ 46.

<sup>24/</sup> The Commission lists licensees in Arizona, California, Georgia, Idaho, Iowa, Kansas, Massachusetts, Nevada, North Carolina, Washington (State), Wisconsin, and the Gulf of Mexico region.

<sup>25/</sup> The list of 31 GHz licensees in Appendix B to the Second Report and Order includes, among others, State of California, pop. 29,760,021; State of Wisconsin, pop. 4,891,769; State of Washington, pop. 4,866,692; San Bernardino County, CA, pop. 1,418,380; San Diego, CA, pop. 1,110,549; Cobb County, GA, pop. 447,745; Charlotte, NC, pop. 396,003; San Bernardino, CA, pop. 164,164; Topeka, KS, pop. 119,883; Santa Clara, CA, pop. 93,613; Daly City, CA, pop. 92,315; and Upland, CA, pop. 63,374. All population data are provided by the U.S. Bureau of the Census, and are taken from 1990 Census data.

<sup>26/</sup> Letter of Mitchell Lazarus to William F. Caton at 5 (Sept. 19, 1996). *See also* Sierra Comments at 2-3.

established the rules governing 31 GHz in 1985,<sup>27/</sup> it was out ahead of the technology — or at least, ahead of affordable technology. It is only in the past few years that equipment at 31 GHz became inexpensive enough to be accessible to the city, county, and state communications systems, hospitals, schools, and traffic control and monitoring systems that now make up more than 70% of the usage in the band. Sierra, which accounts for the majority of the 31 GHz transmitters in operation, shipped 75% more equipment in 1996 than it did in 1995 and, prior to release of the Forth Notice, projected to ship four times more equipment in 1997 than in 1996.<sup>28/</sup> In addition, the market for private network equipment continues to double steadily about every two years. This pattern of penetration is consistent with other new telecommunications technologies, including cellular communications.

Other parties supported Sierra's claims of rapid growth. As of August 1996, one 31 GHz supplier listed 42 customer sites then being installed, on order, or in the planning and specification stages.<sup>29/</sup> The Commission itself conceded that several applications were filed after the release date of the Fourth Notice by new applicants not currently licensed — further evidence of pressure for growth in the band, even under the chilling effect of the Fourth Notice.<sup>30/</sup> The Commission also acknowledged that some of the parties with several applications are large

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<sup>27/</sup> Establishment of a Spectrum Utilization Policy, 57 R.R.2d 1162 (1985).

<sup>28/</sup> This was a conservative estimate based on Sierra's past business with governmental entities and master contract relationships with its common carrier customers. It did not take into account the chilling effect of the Notice in July 1996 or the bar to new point-to-point operations announced in the Second Report and Order.

<sup>29/</sup> Comments of Sunnyvale DGI, Inc. at Attachment (filed Aug. 12, 1996)

<sup>30/</sup> Second Report and Order at ¶ 100.

governmental entities such as the State of Nevada and the cities of Las Vegas and North Las Vegas.<sup>31/</sup>

These facts did not enter into the Commission's decision-making, however, for it simply grandfathered existing licensees while reallocating the entire band to LMDS. That decision cannot be supported on the record. The Commission cannot rest its action on a presumption that use of the 31 GHz band is "relatively light" and concentrated in a few sparsely populated areas,<sup>32/</sup> because the reality is otherwise. Nor can the Commission ignore the evidence of future growth in the band.

The Commission claims to be "considering all *incumbent* licensees and interests in determining whether our [reallocation] proposal is in the public interest."<sup>33/</sup> But considering only the incumbents seriously underestimates the demand. The Commission must also consider the future needs for point-to-point service as evidenced by rapid growth in the band. For LMDS, after all, the Commission is considering *only* future promise.<sup>34/</sup> The Commission cannot fairly balance the growth prospects of LMDS against the present implementation of point-to-point services, without also taking the future growth of point-to-point services into account. Such a

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<sup>31/</sup> Second Report and Order at ¶ 100.

<sup>32/</sup> Fourth Notice at ¶ 99; Fourth Notice at 75 (IFRA § IV).

<sup>33/</sup> Second Report and Order at ¶ 51 (emphasis added).

<sup>34/</sup> Only one small LMDS system is operating today in the United States. Second Report and Order at ¶ 9 n.10.

comparison inevitably yields a miscalculation of the relative need, and any regulation that relies on such a miscalculation is arbitrary and capricious.<sup>35/</sup>

**C. The Commission Has Not Given Proper Weight to the Public Interest in 31 GHz Applications.**

The parties to this proceeding filed detailed information on the public interest in 31 GHz service. Sierra described current applications in traffic signal interconnection, traffic monitoring, interconnecting cellular and PCS cell sites, last mile drop-off for fiber optic rings, PBX range extension, remote medical imaging, television programming distribution, and extending coverage of LAN and WAN networks.<sup>36/</sup> Other parties provided first-hand detail on the importance of 31 GHz traffic control applications to public safety and pollution control.<sup>37/</sup> The International Municipal Signal Association, whose members represent governmental entities, filed detailed information on the value of 31 GHz equipment to traffic control operations.<sup>38/</sup> Comments by municipal governments and a state air quality board provided specific facts on the uses of this technology for public safety and environmental protection, in some cases as part of Intelligent

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<sup>35/</sup> See Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Ins. Co., 463 at 43 (agency rule is arbitrary and capricious if agency failed to consider an important aspect of the problem).

<sup>36/</sup> Sierra Comments at 3-4.

<sup>37/</sup> See Comments of Comstat Communications Inc., Comments of Sunnyvale GDI, Inc., Comments of City of Topeka, Kansas, Comments of City and County of Honolulu, Comments of City of San Diego, and Comments of Mobile Source Air Pollution Reduction Review Committee of the South Coast Air District, State of California.

<sup>38/</sup> Reply Comments of the International Municipal Signal Ass'n.

Transportation Systems.<sup>39/</sup> Two cities explained how their 31 GHz systems not only coordinate traffic lights but also report malfunctions to facilitate the dispatch of maintenance personnel, thereby reducing delays, congestion, and hazardous road conditions.<sup>40/</sup> Two others specified their current governmental investments in 31 GHz equipment and discussed the obstacles that prevent shifting to technologies other than 31 GHz.<sup>41/</sup> Another city, built on rock, noted the impracticability of installing underground conduits for copper cable or fiber optics.<sup>42/</sup> A major 31 GHz equipment reseller pointed out that, with federal funding for roadways declining, state and local governments have no choice but to move traffic more efficiently along existing pavement, and explained how 31 GHz equipment aids this effort.<sup>43/</sup>

The Commission acknowledged the public interest in these applications: “We do not dispute the importance that some State and local governmental agencies place on their utilizing of 31 GHz for traffic control and other functions.”<sup>44/</sup> After describing systems in Southern California, Las Vegas, Palm Springs, San Diego, Topeka, Honolulu, and Long Beach, the Commission concluded,

We find that commenters have demonstrated that the traffic control systems currently using 31 GHz spectrum are an important category of incumbent

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<sup>39/</sup> Comments of City of San Diego; Comments of Mobile Source Air Pollution Reduction Review Committee of the South Coast Air District, State of California.

<sup>40/</sup> Comments of City of San Diego; Comments of City of Palm Springs.

<sup>41/</sup> Comments of City of Topeka, Kansas at ¶¶ 1, 3; Comments of City of Long Beach at 3-4.

<sup>42/</sup> Comments of City and County of Honolulu.

<sup>43/</sup> Comments of Sunnyvale GDI, Inc. at 4.

<sup>44/</sup> Second Report and Order at ¶ 56.

services. . . . These systems are used increasingly by state and local governments to reduce congestion at busy intersections and combat air pollution by controlling vehicle emissions under standards and goals established by the Federal Government.<sup>45/</sup>

In a similar vein, the Commission also noted,

We find that the traffic control systems serve important governmental services and are used to achieve Federal, State, and local goals to relieve traffic congestion and air pollution. . . . Licensed municipalities demonstrate they have substantial investments in signal systems using a number of 31 GHz radio links . . . .<sup>46/</sup>

On the basis of these findings, the Commission extended frequency protection to the incumbent 31 GHz licensees.<sup>47/</sup> But without any explanation of why the expanding use of the band by state and local governments could be ignored, it also eliminated all further private licensing for 31 GHz point-to-point applications and dismissed applications filed after release of the Fourth Notice.<sup>48/</sup> This disregard for future users of the band makes no sense, in view of the Commission's recognition of the public interest in present uses and the pressure to expand these services. To be sure, the Commission suggested several alternatives for governmental entities, but none of those provides an acceptable level of service in most cases.

The Commission's main alternative is for governmental entities to bid on the 150 MHz licences in their BTAs.<sup>49/</sup> But that is not an option for most local governmental entities. Few need more than a tiny fraction of the capacity in their BTAs, so the cost of the spectrum would

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<sup>45/</sup> Second Report and Order at ¶ 59-62.

<sup>46/</sup> Second Report and Order at ¶ 67.

<sup>47/</sup> Second Report and Order at ¶ 85.

<sup>48/</sup> Second Report and Order at ¶¶ 100, 104-05.

<sup>49/</sup> Second Report and Order at ¶ 114.

far exceed the value received. While a commercial entity could recover some of its costs by selling or leasing rights to the excess spectrum, most local and state governments are in no position to operate that kind of business. Moreover, some BTAs encompass municipal jurisdictions — for example, a single BTA encompasses Los Angeles, Long Beach, and Palm Springs, all of which have separate 31 GHz installations. And in any event, even if governments wanted to participate, few could commit the necessary funds within the time constraints of an FCC auction, especially if several jurisdictions had to agree on collaborative bidding.

The Commission's suggestion that governmental entities acquire spectrum from the local LMDS licensee through spectrum disaggregation is likewise infeasible.<sup>50/</sup> As Sierra has explained, a typical traffic control system requires a full 150 MHz for each intersection or stretch of highway, and thus occupies all of the outer sub-bands.<sup>51/</sup> Disaggregation would not provide enough spectrum. And geographic partitioning would require a purchase out of all proportion to the need. A typical system occupies only the small fraction of a jurisdiction's area that carries the heaviest traffic, usually consisting of thin, oddly-shaped filaments on the map. Partitioning would transfer rights to far more area than the local entity can actually use, and so would result in highly inefficient use of the spectrum.

The Commission's other proposed alternatives do not fare any better. Both transferring to a different medium and taking service from a common carrier would require leaving the 31 GHz band, which Sierra has shown to be a near-perfect compromise for traffic control

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<sup>50/</sup> Second Report and Order at ¶ 114.

<sup>51/</sup> Letter of Mitchell Lazarus to Suzanne Toller (Sept. 10, 1996).

applications.<sup>52/</sup> Moreover, to take service from another entity would require putting public safety communications in the hands of a commercial provider that is free to extend or withdraw service at the end of the service agreement or at will — a situation most public safety agencies would find unacceptable. Finally, as the record amply demonstrates, installing wired systems is prohibitively expensive for many localities, because of both the required trenching and the frequent damage caused by construction work.

In presenting its alternatives, the Commission noted that most of the Nation's metropolitan areas do not rely on wireless technology for their traffic control systems.<sup>53/</sup> The relevance of that remark is not clear. If it is meant to imply that wireless systems are not really essential for traffic control, Sierra vehemently disagrees. Today most areas have either inadequate traffic signal coordination, or none at all. Wired systems were the only practical option until just a few years ago, but most localities could not afford them. Since then, however, governments have proven — by voting with their purchase orders — that 31 GHz wireless systems are often the best solution to the problems of traffic control in the real world of overcrowded streets and highways.

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<sup>52/</sup> As Sierra has explained, the antenna for a 31 GHz unit fits neatly inside a standard traffic light housing and can be installed in an hour. Lower frequencies require bigger antennas for the same performance. Accordingly, these require special-purpose housings that are more costly, and their installation in the field is slower, more disruptive, and more expensive. At higher frequencies, on the other hand, the antennas are smaller, but the electronics becomes prohibitively expensive. See Sierra Comments at 12-13.

<sup>53/</sup> Second Report and Order at ¶ 114 n.158.

**D. The Public Interest in Private Operation at 31 GHz Outweighs That in LMDS.**

The Commission's decision to allocate the 31.000-31.075 and 31.225-31.300 GHz sub-bands to LMDS and open them for auction is unwarranted and unwise. LMDS providers showed no need for, or interest in, more than 1,000 MHz of unencumbered spectrum until the Commission proposed giving them 1,150 MHz in the Fourth Notice. Of course LMDS interests supported the proposal thereafter, but they still have neither asserted nor proved that the additional 150 MHz is needed for a successful LMDS offering. In contrast, point-to-point uses, including traffic control and other public safety applications, are in place and growing rapidly. These are critical to the public interest, and in many cases cannot feasibly be moved to other frequency bands or other transmission media.

The issue before the Commission is whether to accommodate these proven and badly needed applications in the 31 GHz outer sub-bands. The cost is only 13% of the LMDS allocation. In view of the rapidly increasing demand and strong public interest considerations in point-to-point service at 31 GHz, the Commission should reconsider allocating the outer sub-bands to LMDS and instead retain them for private licensing.

**II. THE COMMISSION SHOULD REINSTATE PENDING APPLICATIONS IN THE 31 GHz BAND.**

If the Commission is determined to reallocate all of 31 GHz to LMDS, then at the very least it should reinstate the applications filed between the release of the Fourth Notice, on July 22, 1996, and release of the Second Report and Order on March 13, 1997. The reinstated applications should be entitled to the same interference protections as the incumbents, and

applicants that specified the middle sub-band should be permitted to amend to the outer sub-bands.

The Commission grounded its dismissal in part on the proposition that the Fourth Notice put applicants on notice that the Commission was considering a change in the rules.<sup>54/</sup> But that was no notice at all. The Commission first announced a possible reallocation of 31 GHz on the release date of the Fourth Notice, but then dismissed all applications filed after that date. There was no period when applicants had notice of the proposed change and could have acted on that notice.

Even if the time between the Fourth Notice and the Second Report and Order had been an effective notice period, as the Commission assumes, it would have been unrealistically short. To a local or state government implementing a traffic control system, filing the application is the end of the process, not the beginning. The preparatory work, including traffic studies and the process of identifying funds, sometimes take years — far longer than the Commission’s 18 month construction period,<sup>55/</sup> so it often must start long before the application is filed.

In the case of pending applications filed by the Nevada Department of Transportation (“DOT”), the Commission acknowledged that the system “has been underway for several months.”<sup>56/</sup> It further recognized that “our dismissal may create unexpected disruptions and expenses with respect to implementing this plan and achieving its traffic management goals for

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<sup>54/</sup> Second Report and Order at ¶ 100.

<sup>55/</sup> 47 C.F.R. § 101.63(a). Failure to construct and begin operation within that time causes the license to cancel automatically. 47 C.F.R. §§ 101.63(b), (e).

<sup>56/</sup> Second Report and Order at ¶ 101.

the area.”<sup>57/</sup> The Commission decided, however, that those disruptions and expenses would be less than “the impact of expanding LMDS operations over such a system after it were fully implemented.”<sup>58/</sup>

This decision needs a second look. Even without the 31 GHz sub-bands at issue, LMDS has 1,000 MHz of unencumbered spectrum to meet a demand in Nevada that is still wholly conjectural, for services that have not yet been identified. The Nevada DOT, in contrast, had applications on file for specific, badly-needed public safety applications. The Commission can hardly conclude on these facts that the cost to LMDS of building over a specified traffic system in the 31 GHz sub-bands outweighs the cost to Nevada DOT of doing without the traffic system. And the same is true for each of the other applications filed by governmental entities and dismissed under the Second Report and Order.

The Commission’s other stated ground for dismissing the pending applications is its obligation “to allocate the Nation’s natural resource of its spectrum for the most effective and efficient use.”<sup>59/</sup> In many cases an auction will achieve that end, because it tends to place spectrum in the hands of those who can maximize its value. But sometimes the most effective and efficient use is one that cannot be measured in terms of the marketplace, or even in terms of load on the spectrum. Public safety applications are the paradigmatic example. While commercial applications of the spectrum might be valued according to what providers are willing to pay at auction, the value of public safety applications is measured in a different coin

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<sup>57/</sup> Second Report and Order at ¶ 101.

<sup>58/</sup> Second Report and Order at ¶ 101.

<sup>59/</sup> Second Report and Order at ¶ 101.

altogether. Thus, although reinstating the pending licenses might somewhat reduce the value of the outer 31 GHz sub-bands at auction, the inquiry does not end there. The public interest benefits in the reinstated applications — such as better traffic flow, reduced pollution, faster emergency response, less road construction, and efficient use of public funds — must also be taken into account. Here, they outweigh the very limited benefits of auctioning the sub-bands free of the pending applications.

In short, neither of the grounds that the Commission relied on in dismissing the pending applications properly justifies that decision. The fact that applicants were on ostensibly notice last July of changes to the 31 GHz rules is of no help that to governmental entities planning traffic systems, and which in any event must operate under planning horizons far longer than a few months. And the Commission's goal of maximizing value of the spectrum should favor specific applications with a high level of public interest, especially those that further public safety, over a small increment in spectrum to meet a speculative demand.

### **III. THE COMMISSION SHOULD RESCIND THE FREQUENCY TOLERANCE FOR THE 31 GHz BAND SPECIFIED IN SECTION 101.107.**

The Second Report and Order specifies a frequency tolerance of 0.001% for LMDS frequencies.<sup>60/</sup> Formerly the permitted tolerance was 0.03% over the entire 19.7-40.0 GHz band.<sup>61/</sup> Regardless of its actions on the two issues above, the Commission should rescind the

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<sup>60/</sup> 47 C.F.R. § 101.107 (as revised). *See* Second Report and Order, Appendix A.

<sup>61/</sup> 47 C.F.R. § 101.107 (prior to revision).

0.001% tolerance requirement as to the outer sub-bands at 31 GHz band. In the alternative, the Commission should delay imposing the 0.001% requirement for a period of two years.

If the Commission reconsiders its decision to auction the sub-bands, as Sierra requests in Part I above, then there will be no need for a tighter tolerance. If the Commission reinstates pending licenses, as requested in Part II, the applicants should be able to construct under the rules in effect at the time that they filed, just as the incumbents can continue operating under those rules. But if the Commission does not grant the first request (and even if it does grant the second), some local governmental entities may have to try reaching an accommodation with the BTA license holder in order to expand essential public safety operations at 31 GHz. A 0.001% tolerance requirement will make that impossible as a practical matter. Sierra has presented engineering data to show that improving the stability beyond about 0.02% would raise the cost of the radio by a factor of two to three.<sup>62/</sup> The Commission believes that its 0.001% standard is “economically feasible” for LMDS licensees, who are expected to recover their costs from subscribers.<sup>63/</sup> But that standard would put the equipment out of reach of the cash-strapped, tax supported local governmental agencies that make up the majority of 31 GHz users.<sup>64/</sup> These

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<sup>62/</sup> Letter of Mitchell Lazarus to Suzanne Toller (Sept. 10, 1996), *citing* attached latter of Drew Lance, Chairman and CEO, Sierra Digital Communications, Inc. to Mitchell Lazarus (Sept. 6, 1996).

<sup>63/</sup> Second Report and Order at ¶ 291.

<sup>64/</sup> Letter of Mitchell Lazarus to Suzanne Toller (Sept. 10, 1996), *citing* attached latter of Hal Tenney, President, Sierra Digital Communications, Inc. to Mitchell Lazarus (Sept. 6, 1996).

assertions are not mere guesswork: Sierra's role as the major wholesale supplier to this market has always provided it with good information on the relationship between price and demand.<sup>65/</sup>

Moreover, the Commission's only stated purpose in imposing the 0.001% requirement is to aid in coordinating frequency usage at service area boundaries.<sup>66/</sup> But there is no frequency coordination except within 20 km of the BTA boundary,<sup>67/</sup> so the requirement serves no purpose elsewhere in the BTA. And even in the BTA's outer 20 km, any benefits of the stability requirement are highly speculative when applied to 31 GHz. No one knows how LMDS will use the 31 GHz band, if indeed it uses the band at all. Probably the most likely use of this band will be for subscriber-to-hub transmissions, to balance the 29.10-29.25 GHz segment that can be used only in the opposite direction.<sup>68/</sup> Indeed, it was just this limitation at 29.10-29.25 GHz that prompted the Commission to add the 31 GHz band to LMDS,<sup>69/</sup> and at least one LMDS interest cites technical reasons for favoring non-contiguous spectrum at 31 GHz for interactive services.<sup>70/</sup> But subscriber-to-hub communications are point-to-point. They are likely to be more directional and lower in power than the point-to-multipoint transmissions in the opposite

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<sup>65/</sup> Letter of Mitchell Lazarus to William F. Caton at 5-6 (Sept. 19, 1996)

<sup>66/</sup> Second Report and Order at ¶ 291. According to the Commission, this will permit services to be introduced more rapidly and service quality to be significantly improved. *Id.*

<sup>67/</sup> Second Report and Order at ¶ 279.

<sup>68/</sup> Fourth Notice at ¶ 97.

<sup>69/</sup> Fourth Notice at ¶¶ 97-99.

<sup>70/</sup> Second Report and Order at ¶ 41, *citing* Comments of Hewlett-Packard Company at 2.